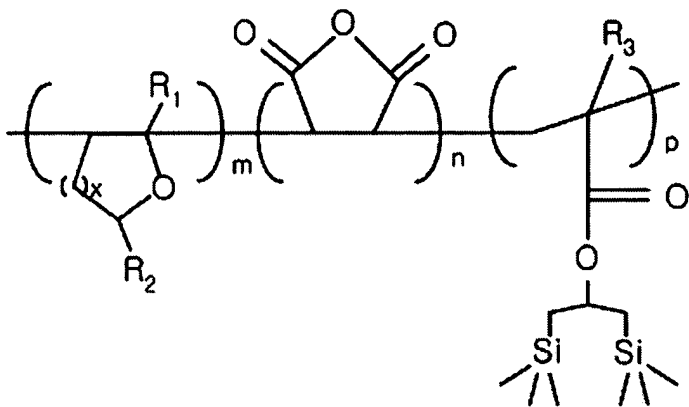


**WHAT IS CLAIMED IS:**

1. A photosensitive polymer comprising a first monomer, a second monomer, and a third monomer of formula:

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wherein  $\text{R}_1$  of the first monomer and  $\text{R}_3$  of the third monomer are an alkyl group;

$\text{R}_2$  of the first monomer is selected from a group consisting of hydrogen, alkyl, alkoxy and carbonyl;

10

$\text{X}$  of the first monomer is an integer selected from 1 to 4; and

$m/(m+n+p)$  is about 0.1 to about 0.4,  $n/(m+n+p)$  is about 0.1 to about 0.5, and  $p/(m+n+p)$  is about 0.1 to about 0.4.

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2. The photosensitive polymer as claimed in claim 1, wherein a weight-average molecular weight of the photosensitive polymer is about 3,000 to about 100,000.

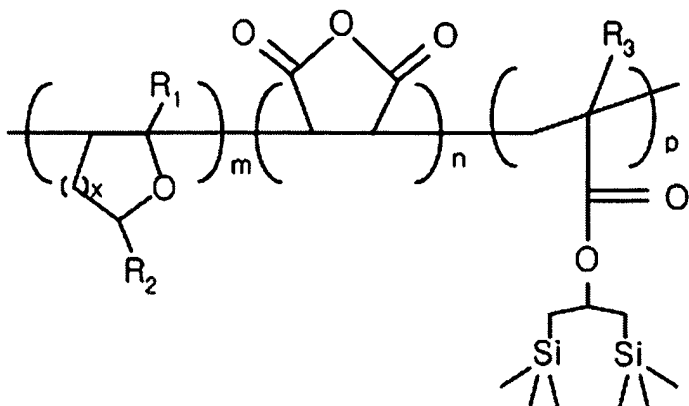
3. The photosensitive polymer as claimed in claim 1, wherein the  $R_1$  of the first monomer and the  $R_3$  of the third monomer are hydrogen or a methyl group.

5 4. The photosensitive polymer as claimed in claim 1, wherein the  $R_2$  of the first monomer is a methoxy group or an ethoxy group.

5. The photosensitive polymer as claimed in claim 1, further comprising a fourth monomer, wherein the fourth monomer is selected from a group consisting of acrylate, methacrylate, acrylonitrile, methacrylonitrile, norbornene, styrene, and any derivative thereof.

10 6. The photosensitive polymer as claimed in claim 5, wherein the third monomer is about 5 wt. % to about 30 wt. % of the photosensitive polymer.

15 7. A resist composition comprising a photo acid generator (PAG) and a photosensitive polymer, wherein the photosensitive polymer comprises a first monomer, a second monomer, and a third monomer of formula:



wherein  $R_1$  of the first monomer and  $R_3$  of the third monomer are an alkyl group;

$R_2$  of the first monomer is selected from a group consisting of hydrogen, alkyl, alkoxy and carbonyl;

$X$  of the first monomer is an integer selected from 1 to 4; and

$m/(m+n+p)$  is about 0.1 to about 0.4,  $n/(m+n+p)$  is about 0.1 to about 0.5, and  $p/(m+n+p)$  is about 0.1 to about 0.4.

8. The resist composition as claimed in claim 7, wherein the PAG is about 1.0 wt. % to about 15.0 wt. % of the photosensitive polymer.

9. The resist composition as claimed in claim 7, wherein the PAG is triarylsulfonium salts or diaryliodonium salts.

10. The resist composition as claimed in claim 7, wherein the PAG is triphenylsulfonium triflate, diphenyliodonium triflate, or di-*t*-butylphenyliodonium triflate.

5 11. The resist composition as claimed in claim 7, further comprising a base additive.

12. The resist composition as claimed in claim 11, wherein the base additive is about 0.01 wt. % to about 2.0 wt. % of the  
10 photosensitive polymer.

13. The resist composition as claimed in claim 11, wherein the base additive is an organic tertiary amine.

15 14. The resist composition as claimed in claim 7, wherein the photosensitive polymer has a weight-average molecular weight of about 3,000 to about 100,000.

20 15. The resist composition as claimed in claim 7, wherein the  $R_1$  of the first monomer and the  $R_3$  of the third monomer of the photosensitive polymer are hydrogen or a methyl group.

16. The resist composition as claimed in claim 7, wherein the  $R_2$  of the first monomer of the photosensitive polymer is a methoxy group or an ethoxy group.

5 17. The resist composition as claimed in claim 7, wherein the photosensitive polymer further comprises a fourth monomer, wherein the fourth monomer is acrylate, methacrylate, acrylonitrile, methacrylonitrile, norbornene, styrene, or any derivative thereof.

10 18. The photosensitive polymer as claimed in claim 17, wherein the third monomer is about 5 wt. % to about 30 wt. % of the photosensitive polymer.